Jacksonville 1999 Meeting

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MEETING OVERVIEW

The Transportation External Coordination Working Group (TEC/WG) held its 14th semi-annual meeting January 20-22, 1999 in Jacksonville, Florida. Over 160 members, participants, and observers representing state, tribal, and local governments, regional groups, industry and professional organizations, and the Department of Energy (DOE) met to address a variety of issues related to DOE's transportation activities for radioactive materials.

A number of Departmental programs with transportation components were represented, including: the Office of Environmental Management (EM); the Office of Civilian Radioactive Waste Management (including the Yucca Mountain Project Office (RW & YMPO); the Office of Naval Reactors (NR); the Waste Isolation Pilot Project (WIPP); and the Office of Defense Programs (DP).

Welcome and Meeting Overview

The participants were greeted by Mr. Gary King, Senior Advisor for the Office of Environmental Management . Mr. King was pleased to be at TEC/WG because one of his new roles is to address the issue of coordination with state and local governments. This is an issue of long standing and one that illustrates the fiduciary duty of public officials to ensure the health and safety of their citizenry. As an official in the State of New Mexico, he had been working on just this issue because of his involvement in WIPP's RCRA permitting process.

He offered his phone number to participants that had issues they would like to discuss. His number is (202) 586-0534.

PLENARY SESSION #1—TOPIC GROUP REPORTS

Rail

- Group is developing a rail companion to the Western Governors' Association WIPP Transportation Safety Program Implementation Guide, commonly known as the "WIPP-PIG."
- Purpose of the comparison to document and describe current rail industry procedures and practices for the transportation of Class 7 (radioactive) materials.
- Group decided to utilize the thirteen issue areas originally identified in the WIPP-PIG document as a "baseline" for this effort.
- Group decided to format the comparison to include the issues exactly as formulated in the WIPP-PIG, and then describe what the rail industry approach is to dealing with that issue.
- Group intends to finalize and release this comparison piece by the July 1999 meeting, at which time the group will go on hiatus.

Training

- 134 pages of comments on the draft training modules.
- Group believes that the training courses needs to be realigned with the OSHA categories--would make the modules easier for employers to fit within their current training structures.
- Training should be available in July 1999 and HAMMER is prepared to offer these training modules as part of the Foreign Research Reactor SNF cross-country shipping campaign in late summer 1999.

- Chief William Ruting (La Grange, IL Fire Department) developed a companion piece to the North American Emergency Response Guide (NAERG) entitled "U.S. Radiological Transportation Emergency Response Guide."
- This guide is being reviewed for consistency with the HAMMER-developed training modules. The group envisioned this as a pocket-sized guide and would like to see it impact the 2002 version of the NAERG.
- Chief Gordon Veerman (International Association of Fire Chiefs) and others are in the process of reviewing NFPA Standard 472 for completeness of radiological response information.

Medical Training Issues

- Group has broken down medical training into two main categories: pre-hospital and hospital care. They have developed a set of skills and training competencies that would address pre-hospital training competencies.
- After reviewing NFPA Standard 473, the group recognized that the Standard did not address training for radiological materials, so they developed an amendment to the standard.
- This amendment will be presented to the NFPA Rules and Standards Committee through a project that is sponsored by the DOE Office of Transportation and Emergency Management and Analytical Services (EM-76). This process is expected to take 1-2 years.

Tribal Issues

- FRA representative updated the group on the status of the DOT response to DOE's inquiry about the tribal right to inspect rail shipments. The response was in the final stages of review in the General Counsel's office and is expected by July 1999.
- The Group has added a representative from the NRC General Counsel's office, as a topic group member, to help keep abreast of developments in the NRC's upcoming draft rulemaking regarding tribes and advanced notification.
- The group also discussed the research that has been conducted on the issue of developing a "umbrella grant" from DOE to states and tribes.
- Several members recommended that DOE take a "lessons learned look" at how EPA grants to tribes have been administered.

Communications

- The University of New Mexico's Alliance for Transportation Research's Transportation Resource Exchange (TREX) phone number (1-877-287-TREX) now operational, and the center should be fully functioning by May 1999.
- The group completed its final review of six redrafted fact sheets, scheduled for printing in late March 1999.
- The topic group is in the process of developing an information matrix that details all DOE-produced transportation information.
- The group revisited the idea of a standing review group, but decided not to proceed because of real or perceived Federal Advisory Committee Act issues.
- Topic group reviewed a draft outline of the National Transportation Program's Communications Plan. Comments due by March 15, 1999.

Transportation Protocols

- Group formed to review and provide input on the DOE's initiative to examine its transportation practices and standardize them where possible.
- 17 areas being examined: pre-notification; emergency plans; routing; inspections; public information; carrier-driver requirements; training; security; equipment tracking; weather/road

conditions; safe-parking/safe/havens; accident notification; emergency response; crisis communication; remediation; and post-shipment.
- Four-phased approach involves data collection and validation, draft protocol development, and review by relevant stakeholder groups such as TEC/WG.
- Group generally agreed with the process the Department presented.
- Information packages provided during the meeting catalogued current practices in all DOE programs.
- DOE has set up an email comment page. The address is: **doe.protocol@em.doe.gov**.

PLENARY SESSION #2—PANEL DISCUSSION OF TEMPER'98 AND NAVY PORTSMOUTH EXERCISES

Presenters:

- Mr. Kelvin J. Kelkenberg, Office of Transportation, Emergency Management and Analytical Services, U.S. Department of Energy
- Captain Eric Jacobs, Montgomery County Fire and Rescue (MCFRS)
- Mr. Mike Sharon, Maryland Department of the Environment (MDE)
- Mr. Ray English, Naval Nuclear Propulsion Program, U.S. Department of Energy

Summary of Mr. Kelkenberg's presentation:

- TEMPER ’98 exercise involved responders from the Maryland Department of the Environment Radiation Assistance Response Team, the DOE Region 1 Radiological Assistance Program Team, and responders from the following Montgomery County offices: Emergency Management Division, Transportation Department, Fire and Rescue Service, Police Department, Emergency Communication Center, and Medical Examiners Office. The exercise lasted approximately 2 hours and involved approximately 75 responders.
- As part of the National Transportation Emergency Preparedness Program (TEPP), DOE's Office of Transportation and Emergency Management and Analytical Services (EM-76) initiated an integrated, comprehensive approach to the exercise planning process by involving three DOE operations offices (Savannah River, Richland, and Brookhaven National Laboratory) along with the State of Maryland and the Montgomery County , Maryland Fire and Rescue Service.
- Montgomery County agreed to allow DOE and its support contractors to pilot model program assessment documents, sample plans/procedures, and draft training materials in order to prepare the exercise participants for their involvement in TEMPER ’98.
- Needs assessment was conducted by the Montgomery County Fire and Rescue Service (MCFRS) in conjunction with DOE in March 1998. This assessment identified several areas for improvement: radiological equipment upgrades and updates to the county’s plans, procedures, and training for responder preparedness were needed.
- Upon completion of the needs assessment, the Exercise Support Team (county, state, and DOE representatives) coordinated procedure revisions using models developed at the DOE Savannah River Operations Office.
- Results from the needs assessment were used to determine training needs, and training was provided using modules and hands-on activities developed accordingly by the HAMMER Training and Education Center in Richland, Washington.

Summary of Captain Jacobs' presentation:

- Overview of Montgomery County, MD: in metropolitan Washington, D.C. area, has a population of approximately 900,000 people distributed over 500 square miles, and employs approximately 1,000 professional firefighters, with another 300 serving in a volunteer capacity.

- Recent systematic changes in the MCFRS had created new needs and an impetus to participate in an exercise like TEMPER '98
- Some of these specific needs included:

  * an update of Emergency Operations Center plans, which to date had focused on fixed facilities;

  * an update of the Emergency Communications Center resources and contacts data;

  * adequate training for police officers;

  * testing of the response relationship with federal entities; and

  * a greater focus on terrorism/security and the domestic use of weapons of mass destruction, in particular the radiation component (on a stand-alone basis and in concert with other types of weapons).

- MCFRS believed that the most significant results of participation in TEMPER '98 were:

  * over 900 firefighters and responders were trained over a nine month period;

  * DOE learned how to integrate its training material for a large and varied response organization;

  * overwhelmingly successful response to minor incident 1000 feet from DOE-Germantown 2 months after exercise;

  * computers and hazmat emergency database were updated; and

  * Suburban Hospital (Bethesda, Maryland) received first significant radiological emergency training and preparedness exposure.

Summary of Mr. Sharon's presentation:

- The State of Maryland had previously held serious concerns as to the focus and objectives of the exercise, in particular as they pertained to DOE.
- Maryland's concerns included:

  * how DOE, through the TEMPER exercise, would deliver on its promises to the State;

  * partnerships with DOE had historically been largely untested;

  * the State needed to preserve its role in the process of communication between DOE and localities;

  * the quality of DOE's training, given it had not been implemented on a significant scale; and

  * the fact that roles and responsibilities for all parties seemed ill-defined.

- One of the most valuable outcomes of the exercise for both the State and Montgomery County was the opportunity to develop partnerships with DOE and its contractors.
- Quality of the training materials was exceedingly high; and the exercise greatly raised awareness levels on the part of local and State officials.

Summary of Mr. English's presentation:

- Reviewed the Norfolk Naval Shipyard Exercise in Portsmouth, Virginia. The exercise was conducted on October 20, 1998 and featured representatives from the eastern and mid-western states, the Umatilla and Shoshone-Bannock tribes, and the rail industry.
- Purpose of the exercise was improved outreach and emergency planning for Navy spent fuel shipments, and to provide an opportunity for interested participants to learn more about classified Navy shipments, their escorts, and accident response.
- Exercise scenario involved a simulated collision between an auto and rail car at approximately 10 m.p.h., with the auto's gas tank rupturing and slight injuries inflicted upon the driver.
- Exercise demonstrated the continued structural integrity of the Type B package, and the exercise leaders explained and demonstrated the "unchanged" radiological condition of its contents to emergency responders.
- Another focus of the exercise was on the escorts, and their role in facilitating response and recovery activities, providing the public with accurate information, and assisting in the resumption of shipping activities after an incident.

PLENARY SESSION #3—PANEL DISCUSSION:
BALANCING FREE SPEECH AND SAFE TRANSPORTATION

Moderator:

- Mr. Chris Wentz, Coordinator, New Mexico Radioactive Waste Task Force

Presenters:

- Mr. Bob Gerber, Assistant Chief, California Governor's Office of Emergency Services
- Ms. Sam Dixion, Westminster (Colorado) City Council
- Captain Ovid Holmes, Contra Costa County (California) Sheriff's Department
- Mr. Tom Marshall, Executive Director, Rocky Mountain Peace and Justice Center

Summary of Mr. Wentz's comments:

- Briefly discussed some of the historical limitations that have been placed on First Amendment rights, particularly when the exercise of free speech obstructed interstate commerce.
- Noted that transportation of radioactive materials is largely regulated by federal law
- Despite disagreement about why and where DOE will be transporting materials in the future, the Department and its contractors have a legal right to ship these materials just as opponents have the right to protest them.
- Other entities are potentially impacted by these activities, he said, particularly local safety and law enforcement agencies that have to address crowd control and traffic disruption issues.

Summary of Mr. Gerber's presentation:

- Provided a brief summary of the experiences his state had had related to the first shipment of foreign research reactor spent nuclear fuel through the San Francisco Bay- area.
- His office first learned about the shipments about a year before the first scheduled arrival.
- Since the shipment would be made by rail, he said, this agency played more of a coordinating role; it would have been more directly involved had the shipment been made by truck.
- Sensitivities existed at the state level because the Governor and others were on the record as opposing the shipments
- Several different kinds of training were developed: radiological, emergency response, awareness level training and law enforcement training. Law enforcement training was scheduled last, several months prior to the shipment's arrival.
- One very critical aspect to advance planning: the designation of a single point of contact for each involved (federal, Tribal, state, and local) agency.
- Meetings were also held involving DOE and other Federal agencies like the FBI, to discuss communications and coordination efforts, and to plan for potential shipment disruptions.
- Some problems arose when the actual shipment took place in late July 1998; some information that should have been safeguarded ended up on the local news.
- Shipment left the originating point in Concord, California at midnight and the shipment through California was uneventful. Checkpoints and escorts were used to track the shipment.
- Overall, the State of California learned five main lessons:

  * accurate and timely information sharing was critical;

  * there was a great deal of coordination among different levels of government;

  * other players like DOE and its myriad contractors were involved;

  * some funding commitments made by DOE were not fulfilled; and

  * confusion about safeguarded information led to security leaks.

Summary of Ms. Dixion's presentation:

- Discussed perspectives as a local official whose municipality lies near the Rocky Flats facility.
- As an elected official, issues about citizen demonstrations and exercising free speech come up often.
- Citizens don't seem to have a high level of concern about transportation unless there's been an accident and traffic gets tied up.
- Municipal police and fire departments are the agencies most concerned about shipment from Rocky Flats.
- Several recent traffic accidents involving other types of hazardous materials have pointed up some of the many adverse consequences that can result from a transportation incident.
- Implementing good training and communicating well among all involved parties are extremely important in planning a successful campaign.

Summary of Captain Holmes' presentation:

- Gave overview of his office's involvement in the recent foreign spent fuel shipments through the Concord Naval Weapons Station
- Experiences at the local level were rather unique given the county's location and demographics.

- There has been a long history of civil protest focusing on the Concord weapons station, culminating with an incident where a protester was run over by a munitions train.
- Public protests cost the local governments a great deal in terms of resources, law enforcement overtime, court and jail costs, etc.
- There were some initial problems getting DOE and other federal entities to understand the predicament of county, but eventually good relationships established.
- Environmental community had significant concerns related to package safety
- Relationships between DOE and the County were strained at first, stemming mainly from a lawsuit the county filed to stop the shipments. As the lawsuit was resolved relations improved.
- The experiences the County had with these shipments has helped it plan and coordinate better with other agencies, including within the State, for other kinds of shipments and emergencies.

Summary of Mr. Marshall's presentation:

- Mr. Marshall's organization and related groups have disagreed with Ms. Dixion and the Westminster City Council on several occasions, but that overall they had worked closely and well together.
- Has taken issue with the State of Colorado's positions on several issues related to Rocky Flats, he said, but reiterated that people had come to respect one another's viewpoints.
- Mr. Marshall said that part of the problem surrounding nuclear waste cleanup issues is that there is no broad consensus on what to do with the legacy of nuclear waste. Until a consensus is developed, there are going to be public protests
- He believes there is a need for an independent technical review of cleanup and to establish a national dialogue that addresses the larger issue of nuclear waste cleanup.
- People need to be convinced by the evidence that accepting today's risks will provide long-term benefits.
- Transportation-related risk concerns include: issues about container integrity, human error factors in handling, emergency response preparedness and overall uncertainty about the properties of radioactive materials.

PLENARY SESSION #4: PANEL DISCUSSION: LESSONS LEARNED FROM RECENT NAVY NAPALM SHIPMENTS

Moderator:

- Mr. Dave Crose, Indiana Emergency Management Agency

Presenters:

- Mr. Bowden Quinn, Grand Calumet Task Force/Lake County, IN LEPC
- Dr. Dean Larsen, Manager, Safety & Industrial Hygiene US Steel
- Mr. Pat Brady, Burlington Northern Santa Fe Railroad

Summary of Mr. Quinn's presentation:

- Discussed why communities oppose hazardous waste shipments; gave some background on the community involved and the anti-waste sentiment of Lake County
- Discussed how the community became aware of the shipments and how opposition continued to grow even after efforts were made toward public information

- The fact that napalm was considered explosive, and the later discovery fact that it contained benzene (and other carcinogens) played a part in the opposition.
- Many people in the community trusted that their Local Emergency Planning Committee (LEPC) would be informed; the fact that the LEPC was not informed of the shipment played a major part in raising opposition to the movement of this material.

Summary of Dr. Larson's presentation:

- Framed his analysis using the tenets of Peter Sandman's book "Responding to Community Outrage" and the equation "Risk = Magnitude x Probability."
- Noted that experts usually ignore "outrage" when they talk about risk. The converse is true with the public; risk is often overstated when the outrage is high and the hazard is low.
- Suggested that the most important question to ask in any risk communication is whether it is morally relevant or irrelevant. If it perceived as is a "moral" problem/discussion, then the public will not accept tradeoffs.
- Public relations/stakeholder involvement problems occurred because after the shipment plans were revealed, the principals did not come forward to correct the record and did not communicate directly with the community.

Summary of Mr. Brady's comments:

- He noted that the railroad meets routinely with clients, including the Navy, to discuss the process of repackaging and transporting this and any other waste
- In this case, the railroad discussed the logistics of shipping and relied on the Navy and the processing company involved to handle the issues of public concern.
- Mr. Brady also noted that the Risk = Hazard + Outrage equation held true here but was enhanced by the lack of prior notification regarding the shipments. The Navy did not want the information released regarding the timing of the shipments.
- The napalm material was held up in transit outside of Indiana and later sent to a new processing site in Houston, Texas for disposal.

Dave Crose closed by stating that originally these were non-controversial shipments, but became controversial because owners and shippers of the material did not understand the power of outrage and the correct way of addressing the situation in a non-confrontational manner. He noted that many parallels can be drawn with the shipments of DOE's nuclear and hazardous materials.

PLENARY SESSION #5: SUMMARY OF BREAKOUT SESSIONS

General Planning

A Note on Format and Approach:

The General Planning Breakout sessions featured an interactive tabletop exercise that presented the "big picture" for the year 2002 for the transport of three waste streams: (1) low-level; (2) mixed; and (3) high-level waste. The data used in the exercise were developed from the report "Accelerating Paths to Closure." (June 1998)

The goal of the exercise was to develop a better understanding of the reasoning and process used in planning for DOE waste/material and spent fuel shipments. The tabletop aimed to develop and exercise the

ability to anticipate, communicate and prioritize issues and concerns tied to routing decisions. In addition, participants gained an understanding of the issues raised, impacts on DOE programmatic decisions and how to integrate planning for multiple DOE radioactive material waste streams.

The sub-group was asked to:

(1) review a set of transportation planning criteria and identify other issues and concerns (e.g. infrastructure, equity, level of state/tribal/local emergency preparedness, politics, activism, security, etc.) associated with shipping DOE waste/material streams;

(2) evaluate and prioritize these criteria, issues and concerns; and

(3) identify mode and potential routes based on an excerpt from DOT regulation HM-164 routing criteria and taking into consideration the flow of DOE waste/material streams.

Results of Session:

Spent Fuel	Mixed Low-Level Waste	Low-Level Waste
In general, most participants chose the western route (I-81) over the more direct but more congested eastern route (I-95) to transport spent fuel from the Massachusetts Institute of Technology to the Savannah River Site. • Several individuals chose the I-95 route simply because it was the shortest time in transit. • Participants noted several additional criteria not considered in the exercise: cost; emergency response time; and political considerations. • Participants identified a number of important criteria such as: * public interest and concern; * DC/NY City corridor; * public safety/timing of emergency response for at-risk populations; * weather; * construction and infrastructure; * non-compliance with regulations; * issues of national emergency. • Emergency response	Participants discussing this waste type primarily chose the eastern (southern) route (I-79) versus the western (northern) route (I-81) between Brookhaven National Laboratory and the Oak Ridge National Laboratory. • Participants noted that they lacked accident information that would enable them to make a more informed decision. • Support for this route choice was: a more direct route should result in less general population risk. • A primary concern about the I-81 route was that it was more mountainous, with implications for weather, safe parking, etc.	Two of the sub-groups discussing this waste type selected the southern route (I-90) between Argonne National Laboratory to Hanford, Washington. • Emergency response experience (especially with DOE materials) was a key evaluative factor • Routing equity issues also cited • Population risk and exposure not raised as a determining factor One sub-group chose the northern (I-94) route because the route crossed fewer Tribal lands. • Several participants asked for reconsideration of mode choice

requirements should be factored into decisions about planning for the transportation of this material.		

Emergency Management Planning & Training Assistance

Overview of NFPA Standards Initiative

- Jim Cruickshank listed the objectives of the NFPA Standards Initiative as: (1) to enhance the series for radioactive materials; and (2) standardize training and other requirements.
- Recent achievements include the development of revisions to NFPA Standard 473 on Training Competencies and an initial draft of NFPA 472, Training Competencies for Responders.
- Work on NFPA 471, Recommended Practices/Equipment, is anticipated in the near future.

Overview of TEMPER '98 Exercise

- Captain Eric Jacobs (Montgomery County) and Mike Sharon (Maryland Department of the Environment, MDE) summarized the logistics of a staged traffic accident at the intersection of Shawnee and Gateway Center Drive near Interstate Highway 270. The scenario involved multiple vehicles and 8 simulated radioactive materials packages scattered around the scene.
- Several victims were involved, including 1 fatality and 1 identified as contaminated. The Suburban Hospital Trauma Center participated in the exercise and treated the contaminated victim. Shady Grove Hospital in nearby Gaithersburg accepted the noncritical injuries. Patient handling involved four stages: assessment, decontamination, packaging, and transport.
- Montgomery County Police officers were first on-scene. Montgomery County Fire and Rescue responded with 30 pieces of equipment, including a hazmat team. Pulling that many units "out of service" was a logistics problem in itself. Other resources included MDE and the DOE RAP Team.
- Ken Keaton explained exercise planning. In February 1998, a pre-exercise needs assessment was performed, followed by package development using the "Drill in a Box" methodology. The team selected one of several pre-scripted scenarios and modified it to meet their needs. Logistical considerations included location/routes of entry, selection of evaluators/controllers, props/simulations, communications network, selection of actors, debriefings and final report.
- Jim Price discussed training for the exercise. A pre-training assessment was done and the full suite of 17 training modules requested. Training modules, tabletops and drills were conducted between August and October 4. 750 firefighters, 350 police officers, and 25 hospital staff were trained. The training was rated 4.34 in a range of 1-5 evaluation.
- Ray Weber summarized public outreach associated with TEMPER. A media plan was developed and a media kit assembled using DOE/local/state input and information. As part of the media plan implementation, DOE and local officials were briefed, letters/fact sheets were sent to Montgomery County officials and local businesses and schools, and media releases were prepared. The main goal was to contact the correct people with appropriate information. Good media attendance was experienced, with 3 television stations and a couple of newspapers present.

Overview of Training Program Status Report

- Key findings upon review of the training materials indicated the modules didn’t flow well and were not sequenced to fit the training levels associated with hazmat response training.
- Some of the information provided was not needed.
- Training needs to be reinforced with practical exercises.

- The following recommendations were made: review and realign the training modules; retain the "nice to know" information and incorporate it into a special module.
- Training has been reformatted under 17 new modules. The path forward includes restructuring where necessary, development of instructor guides, and pilot training.
- A revised draft of the training modules will be available for the July TEC/WG 1999 meeting. Developers will be looking at all training delivery mechanisms and are interested in receiving comments on new training modules only.
- Hard copies of training modules will go to DOE regional offices which will work with the States in their region to distribute and incorporate materials into state training programs.

Transportation Operations

Overview

The Transportation Operations breakout session featured a discussion of the DOE Radioactive Materials Transportation Protocol Initiative, led by Elmer Naples of the DOE Naval Nuclear Propulsion Program; an update on the status of DOE's Transportation Tracking and Communications System (TRANSCOM), presented by Mona Williams of DOE's National Transportation Program-Albuquerque Office; and a presentation by Paul Zebe, representing the U.S. Department of Transportation's Research and Special Programs Administration (RSPA), of the criteria underlying DOT's "Identification of Factors for Selecting Modes and Routes for Shipping High-Level Radioactive Waste and Spent Nuclear Fuel" report.

DOE Transportation Protocols Initiative

The session began with Mr. Naples' explanation of what led the Department to undertake the protocols initiative. The Department has been working for about 8 months on this effort, which was initiated in part due to expressions of concern by stakeholders over the lack of consistency concerning transportation operations among the many different DOE programs that conduct transportation activities. As a result, DOE's Senior Executive Transportation Forum (SETF) is conducting an ongoing review of the activities of the various programs, and will attempt to standardize them across the Department, wherever possible.

Mr. Naples gave a brief synopsis of DOE's ongoing radioactive materials shipments. DOE programs make approximately 4000-5000 radioactive material and waste shipments annually; these radioactive materials range from spent fuel and high-level waste to low-level waste, but materials transported by DOE make up only a small fraction of the 3 million radioactive materials shipments conducted in the U.S. on a yearly basis. However, the number of DOE radmat shipments are projected to increase substantially in the next 10-20 years. Mr. Naples described the different types of materials that are transported by the Department, as well as the programs responsible for shipping them. This information is summarized in the table below:

DOE Program	Materials Shipped
Defense Programs	• Highly enriched uranium • Weapons-related materials • Tritium
Environmental Management	• Plutonium residues and oxides • Highly enriched uranium • Spent nuclear fuel • High-level waste • Transuranic (TRU) waste • Mixed transuranic waste • Low-level waste

	• Mixed low-level waste
Office of Fissile Materials Disposition	• Highly enriched uranium
Naval Reactors	• Highly enriched uranium • Spent nuclear fuel • Low-level waste • Mixed low-level waste
Nuclear Energy, Science, & Technology	• Radioisotopes • Plutonium-238 (non-weapons use) • Spent nuclear fuel
Office of Civilian Radioactive Waste Management	• Spent nuclear fuel (future) • High-level waste (future)
Energy Research	• Low-level waste

Some general findings about current protocols and practices that are applicable to all of these shipping programs included:

- DOE operating programs are responsible for shipping their own materials, which means that responsibility for shipping is to some degree fractured;
- DOE adheres to all applicable laws, public health and safety standards, and DOT and NRC regulations in all of its protocols and practices, regardless of how they may differ;
- To a large degree, the differences in protocols and practices that do exist are due in large part to the broad range of materials that are shipped, and the different requirements the Department must meet when doing so (i.e., differences in packaging by waste type);
- Some differences are based on the preferences and successful operational experiences of the various programs;
- Some shipments involve materials subject to national security requirements, and must therefore conform to strict safeguarding requirements;
- Despite the differences that do exist, DOE has an excellent safety record using existing protocols and practices.

DOE has been not addressed the reasons for these differences—thus, the SETF Protocols Initiative. Through this Initiative, DOE intends to pursue a degree of standardization of transportation protocols and practices across operating programs. Additionally, in areas where it is determined standardization is not appropriate, DOE will explain the rationale for such a determination. Stakeholder participation will be a key aspect of this Initiative. The four phases of the protocol evaluation process:

- Phase I—compile and identify information on current protocols and practices
- Phase II—analyze compiled information for standardization opportunities
- Phase III—Identify/explain evaluation results; prepare a draft protocols and practices document
- Phase IV—"Finalize" protocols and practices document

DOE has completed and validated about 90% of the data. Once DOE completed Phase I, program representatives would assess the data by topical area and assess where standardization might take place in

Phase II (Phase II is estimated to take 6-18 months, Mr. Naples commented). These findings would be enunciated and explained in Phase III; Phase IV would feature the development of a "final" report, which would be periodically updated and revised as campaigns and their protocols evolve.

Stakeholder interface opportunities were identified by phase. Phase I offered a unique opportunity for interface with stakeholders through distribution of the information that is being compiled and through updates on the Department's progress. Mr. Naples stressed that one area in which DOE particularly needs stakeholder input is on the 17 topical areas it has identified, in particular whether all of the important issues are covered by these areas, whether the areas should be combined, or whether additional areas should be added. In Phase II, DOE plans to share the preliminary evaluation results with stakeholder groups, to obtain their input on the analysis that was conducted. The TEC/WG Protocols Topic Group would be instrumental in that regard, both for group discussion and a more individualized interaction with stakeholder group representatives. Phase III, which would include the production of a draft documentation of existing protocols and practices, would feature a wide distribution to all identified stakeholders (even those that do not participate in regular stakeholder forums) of both that document as well as the results of the Phase II evaluation. A similarly broad distribution is also planned for the protocols document once it is "finalized" in Phase IV; additionally, it will be presented along with the completed process results at various stakeholder meetings, including the TEC/WG.

Currently existing agreements that DOE has developed regarding shipping practices should be largely unaffected by the standardization process, and any potential modifications that might occur would be discussed with all parties affected by those agreements. This process was not designed expressly to satisfy the desires of DOE stakeholders, but to improve Departmental radioactive materials transportation management and communications and to ensure the continued safe transportation of those materials.

Transportation Tracking and Communications System (TRANSCOM)

- TRANSCOM is a 24-hour, real-time tracking and two-way communications system designed to monitor the movement of radioactive materials including spent nuclear fuel, high-level radioactive waste, transuranic waste, and other high visibility shipments, as determined by the Department under DOE Order 5500.1B.
- The system had failed in the most recent WIPPTREX exercise, but in the last 6 months it has been subjected to major software and hardware revisions and had passed a 2 day test in December.
- In this test, the bills of lading that had been added to the system were readable, and 5 shipments were monitored at once, with 26 users from 15 states on the system simultaneously.
- DOE-NTP is currently consulting with telecommunications experts to fix on-going problems experienced by users attempting to access the system with a modem.
- Fifteen (15) shipments had been tracked using TRANSCOM in the last 6 months, and that plans are to move TRANSCOM towards an internet-based system in the near future.
- A TRANSCOM steering committee was being formed to ensure that this would be a smooth transfer, as well as to deal with other issues that might arise.
- This committee will consist of representatives from states and localities, including emergency responders.

DOT Mode and Route Study

Mr. Zebe introduced himself and explained to attendees that Richard Hannon and Thomas McNamara (both of DOT) were also scheduled to present this material but had fallen ill and were unable to participate.

- Mr. Zebe discussed DOT's "Identification of Factors for Selecting Modes and Routes for Shipping High-Level Radioactive Waste and Spent Nuclear Fuel" study, which he explained was mandated under Section 15 of the Hazardous Materials Transportation Uniform Safety Act, or HMTUSA.
- HMTUSA directed DOT to conduct a study of the factors which should be taken into consideration by shippers and carriers in order to select routes and modes which would enhance

overall public safety, as well as the degree to which those factors affected overall public safety. The Act also required said study to include an opportunity for public comment.

- The initial factors for consideration that were outlined by Section 15 of HMTUSA were:

  Quantities of high-level waste and spent nuclear fuel

  Types and conditions of modal infrastructure

  Exposure and other risk factors

  Terrain considerations

  Continuity of routes

  Available alternative routes

  Population density

  Emergency response capabilities

  Environmental impact factors

- The emphasis of the study was on three items: overall public safety, qualitative analysis, and the activities of shippers and carriers.
- HMTUSA dictated to DOT that cost and economic considerations should not outweigh public safety, that relative relationships should take precedent over absolute numbers in the analytical portion of the study, and that various government agencies and interest groups should not supplant shippers and carriers as the primary actors focused upon in the study.
- The study approach consisted of five major steps:

  Define "enhancement of overall public safety"

  Review current mode and route selection practices

  Identify primary factors impacting upon practices and overall public safety

  Perform a case study analysis of primary factors

  Perform a qualitative evaluation of primary factors

- The study eventually defined "enhancement of overall public safety" as the minimization of radiological exposure during transportation activities and the minimization of the impact of transportation accidents that do not involve radiological releases.
- The study further clarified this definition as referring to a minimization of the effects of incident-free radiological exposure (such as in the exposure to the population and/or transportation workers during normal conditions), accident-induced radiological exposure (i.e., due to the breach of a container), and the non-radiological consequences of accidents (deaths and injuries that occur but are not related to the nature of the cargo).
- In the next step, a review of mode and route selection practices, the study reviewed current industry practices—route restrictions, speed limits, and the like—and existing laws and regulations relating to them for general commodities, non-nuclear hazardous materials, and nuclear materials.
- In identifying the primary factors underlying these current practices, the study initially identified candidate factors, then performed a hierarchical analysis of the candidate factors, and finally carried out a mathematical modeling of risk.
- The set of candidate factors numbered 82, and were assembled from a comprehensive review of various laws and regulations (including Sections 4 and 15 of HMTUSA), the relevant literature (including U.S. and Canadian routing guidelines), and work conducted by the Technical Advisory Group (TAG), which was convened for this project.
- The TAG consisted of 14 participants, representing carriers, shippers, state governments, regional government organizations, public interest groups, and federal agencies.

- Once the candidate factors were identified, they were screened to identify possible primary factors in each of the following categories: incident-free radiological exposure, accident-induced radiological exposure, and non-radiological consequences of accidents. The primary factors identified by the study for each of these three factors were:

Primary Factors Identified in Hierarchical Analysis (by category)

Incident-free Radiological Exposure	Accident-induced Radiological Exposure	Non-radiological Consequences of Accidents
General population exposure	General population exposure	Accident rate
Transport worker exposure	Transport worker exposure	Trip length
Shipment duration	Environmental exposure	Amount of material
Amount of material	Accident rate	
	Trip length	
	Emergency response	
	Amount of material	

- The next stage in the study was to develop mathematical risk models to identify a parallel set of primary factors based on the relationship between risk and the factors leading into risk, upon which it would be possible to compare the risk model factors to the primary factors identified in the hierarchical analysis. The factors identified through risk analysis were:

Primary Factors Identified in Mathematical Risk Models (by category)

Incident-free Radiological Risk	Accident-induced Radiological Risk	Non-radiological Risk
General population	General population	Accident rate
Occupational population	Occupational population	Trip length
Trip length	Accident rate	
Shipment duration	Trip length	

- The case study analysis portion of the study, based on the risks associated with 65 different mode and route combinations (encompassing truck, rail, dedicated train, barge, and rail/barge) concluded that there was a fairly good fit between the factors identified by the hierarchical analysis and by the mathematical risk modeling.
- The key findings were that while primary factors vary, radiation risk is low and shipment duration appears to be the most significant factor impacting overall public safety. The amount of material shipped tends to affect mode choice, the number of trips involved, and hence total risk.